

## **REMARKS**

The examiner objects to Figs. 12, 13 and 14 because only that which is known in the art is illustrated. Accordingly, applicants amend Figs. 12-14 to include the legend "Prior Art" as requested by the examiner. Withdrawal of this objection is respectfully requested.

Claims 1 and 2 stand rejected under 35 U.S.C. § 102(b) or § 103(a) as being unpatentable over Beckmann et al. (USPN 5,350,001). Applicants traverse this rejection because Beckmann fails to disclose or suggest that an amplitude of bent portions of a sipe in a tire radial direction are set in a range of 0.5 to 5.0 mm.

Beckmann discloses that a lamella 1", once embossed, has bending lines 3" and 4" that have zigzag shapes with amplitudes in a tire radial direction and a tire circumferential direction, respectively. The bending lines 3" of Beckmann are displaced linearly from one another by an amount C and form an angle  $\alpha''$  in relation to bending lines 4". The amplitude of the zigzag shape and the radial direction formed by bending lines 3" is within a range of C/2 and 3C.

However, Beckmann does not disclose a measurement of C. The examiner asserts that B and C measure the same distance, but applicants respectfully disagree. Applicants submit that while C measures the vertical displacement of one bending line relative to another, B measures the shortest distance between two bending lines. Thus, while the values of B and C are related, they are not the same. That is, the value of C is given by the equation  $(C = B / \sin(\alpha''))$ , and the range of C cannot be determined. Moreover, since

the amplitude of the zigzag shape described by bending line 3" is given in terms of C, the amplitude of the bending line in the tire radial direction also cannot be determined. Accordingly, Beckmann does not disclose or suggest a zigzag shape with an amplitude in the tire radial direction in a range of 0.5 to 5.0 mm. For this reason, applicants request withdrawal of the § 102 and § 103 rejection of claims 1 and 2.

Claims 3-9 stand rejected under § 103(a) as being unpatentable over Beckmann in view of Langier '965 (USPN 4,794,965) and Langier '002 (USPN 5,783,002). Applicants traverse the rejection for the reasons below.

Regarding claim 3, applicants traverse the rejection because the cited prior art references fail to disclose or suggest a sipe such that while the amplitude of the sipe and the tire circumferential direction is set constant, a tilt angle of the sipe and the tire circumferential direction to a normal-line direction of the tread surface is set smaller at a portion closer to the bottom of the sipe than at a portion closer to the tread surface. Langier '965 shows in Fig. 3A, two sipes 510, 511 where angles  $\theta$  decrease as a function of depth P. That is, the further from the tread surface an angles  $\theta$  is, the smaller the measure of that angle.

However, Langier '965 teaches that the decrease in angles  $\theta$  is achieved by reducing amplitude of the sipes 510, 511, while holding a wavelength of the sipe constant. Similarly, Langier '002 discloses an amplitude  $\alpha_B$  that decreases as a function of a depth of an incision. Accordingly, the cited prior art references, taken alone or in combination, fail to disclose or suggest a sipe having a constant amplitude in the tire circumferential direction, a

tilt angle of the sipe that the tire circumferential direction relative to a normal-line direction of the tread surface that is set smaller at a portion closer to the bottom of the sipe than in a portion closer to the tread surface. For this reason, applicants respectfully request withdrawal of the rejection as it is applied to claim 3.

With regard to claim 4, applicants traverse the rejection because the cited prior art references fail to disclose or suggest a sipe having a tilt angle in the tire circumferential direction relative to the normal-line direction of the tread surface that is not smaller than  $15^\circ$  in the portion closest to the sipe bottom.

In Langier '965, in Fig. 3A, shows a sipe 511 having an angle  $\theta_E$  that is closest to the sipe bottom. At Col. 5, line 19, Langier '965 discloses that angle  $\theta_E$  is equal to  $10^\circ$ . Moreover, Beckmann and Langier '002 are silent regarding the measure of an angle closest to the sipe bottom. Thus, none of the cited prior art references, taken alone or in combination, disclose a sipe when the tilt angle of the sipe in the tire circumferential direction to the normal-line direction of the tread surface is not smaller than  $15^\circ$  in the portion closest to the sipe bottom. Accordingly, applicants request withdrawal of the rejection of claim 4 for at least this additional reason.

Regarding claim 6, applicants traverse this rejection because the cited prior art does not disclose or suggest a pneumatic tire having a sipe with a zigzag shape that has an amplitude in the tire radial direction in the range of 0.5 to 5.0 mm.

As discussed previously, the magnitude of the amplitude of the zigzag shape defined by bending lines 3" of Beckmann cannot be determined because the value of C of


Beckmann cannot be determined. Moreover, Langier '002 is silent regarding an amplitude of an incision in a tire radial direction. Additionally, Langier '965 is silent regarding an amplitude of a sipe in a tire radial direction. For these reasons, applicants respectfully request withdrawal of the rejection of claim 6 and its associated dependent claims.

Claims 10 and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Beckmann in view of Langier '965 and Langier '002, and further in view of Tagashira et al. (JP 09323511). Applicants traverse this rejection because none of the cited prior art references, taken alone or in combination, disclose or suggest a sipe having a vertical portion extending on a normal line to the tread surface. As shown in Fig. 10 of the present specification, each of the sipes 5 has a portion adjacent to where the sipe meets the tread surface S of the tire. For some types of tires, the section of the sipe 5 joining the tread surface S extends in a normal-line direction relative to the tread surface. This advantageously reduces failure in the mold release process when forming the tires. The examiner does not assert that any of the cited prior art references discloses or suggests sipes that have a vertical portion extending on a normal-line to the tread surface. Moreover, after review of the cited prior art references, applicants found no teaching or suggestion of this feature. Accordingly, withdrawal of the rejection is respectfully requested.

For the foregoing reasons, applicants believe that this case is in condition for allowance, which is respectfully requested. The examiner should call applicants' attorney if an interview would expedite prosecution.

Respectfully submitted,

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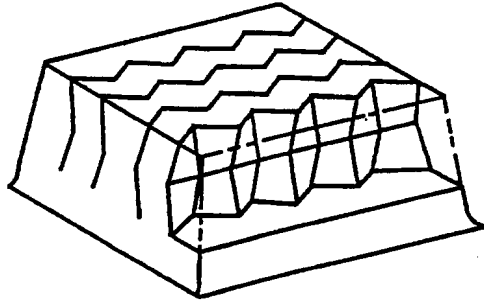
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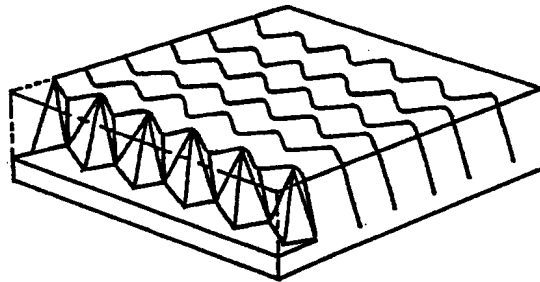
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*Prior Art*  
**Fig.12**



*Prior Art*  
**Fig.13**



*Prior Art*  
**Fig.14**

